Environmental Education In The Workplace:

Inducing voluntary transport behaviour change to decrease single occupant vehicle trips by commuters into the Perth CBD.

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This thesis is presented for

the degree of Doctor of Philosophy of Murdoch University.

27th March

2003
Declaration

I declare that this thesis is my own account of my research and contains, as its main content, work that has not previously been submitted for a degree at any tertiary education institution.

_____________________________________

Catherine Mary Baudains
List of Publications

Aspects of this thesis have been previously published in the following documents:


Baudains, C., Styles, I. and Dingle, P. (2001b) TravelSmart Workplace: Walking and the journey to work. Road and Transport Research, 10(1) 26-34. (Chapters 2 and 8)

Baudains, C. (2002) Evaluation of Three TravelSmart Workplace Interventions. A report of research conducted by Murdoch University for the Department of Environmental Protection. Department of Environmental Protection. Perth, Western Australia. (Chapters 4, 5, 8, 9 and 10)

Abstract

As populations increase and air quality continues to decline in many cities around the world, there is growing recognition that human dependency on car based transport is a serious pollution issue. The potential exists to change this aspect of human behaviour using environmental education to develop more sustainable transport practices. The application of education strategies to achieve behaviour change in transport mode choice may benefit from an interdisciplinary approach.

This research examined the effectiveness of three different educational strategies in a workplace situation in achieving a shift in transport mode away from the single occupant vehicle. This research aimed to determine if workplace based education interventions that stimulate a deeper level of learning, and encourage self-regulated learning and reflective practice, are more likely to achieve positive behaviour change than interventions based on more superficial learning. A secondary aim was to determine if the characteristics or type of workplace influence the effectiveness of particular education strategies. The research focuses specifically on people’s perceptions of transport behaviour and air pollution.

The research examined the effectiveness of three workplace based interventions which aimed at reducing the use of single occupant vehicles (SOV) for commuting to work resulting in an increase in the use of green transport (alternatives to the SOV). The primary goal of the three educational interventions was to achieve an increased awareness, development of positive attitudes and increased empowerment regarding sustainable transport choices. Based on a combination of environmental education
and self-regulation of learning theory it was theorized that achieving the three afore
mentioned educational outcomes would be highly likely to result in a change in
behaviour.

The three interventions differ in level of participant involvement, while the
information and structure of each intervention was controlled as much as is possible
in a naturalistic study. The intervention designs were based on educational theories
including cognitivist information processing, Vygotskian/social constructivism, and
self-regulation of learning. The first intervention provided information to participants
impersonally with no additional support. The second intervention incorporated a
volunteer to model pro-environmental behaviour, facilitate discussion of issues, and
aid in planning commute trips using alternatives to the single occupant vehicle. The
third intervention included the formation of a green transport planning group within
the workplace which aimed to identify and address barriers to using alternative
transport in the workplace through the development of a green transport plan.

In the naturalistic workplace setting, mixed methodologies (qualitative and
quantitative) were employed to examine the relative effectiveness of the three
interventions in terms of participants knowledge about, attitudes towards and
behaviour (action) in regard to transport, as well as changes at an organizational
level. Multiple case studies and surveys were used to collect data about employee
transport behaviour, attitudes, and knowledge in 13 workplaces situated in the central
area of Perth, the capital city of Western Australia, before and after a period of
intervention. To allow comparability between workplaces in terms of organisational
structure and function six of the 13 workplaces were selected to examine in detail,
one government and one engineering organization in each of the three intervention groups.

It was found that the level of knowledge about car use and air quality was increased in all three intervention groups, suggesting increased involvement does not improve the chance of increasing knowledge. In contrast, significantly more positive attitudes to car use and air quality issues were developed in only the two most involving interventions, suggesting information distribution alone is unlikely to influence attitude. There were no changes in the general environmental attitudes across the intervention groups. Single occupant vehicle trips were significantly reduced (p<0.05) in the second intervention group only. An overall significant increase was reported for self efficacy (as a measure of empowerment) but no significant change was reported for any particular intervention group. At an organizational level the third intervention resulted in the greatest organizational change, and it is likely that the measures implemented as a result of the green transport planning process will have an ongoing impact on employee transport behaviour in the participant workplaces.

The effectiveness of each intervention type also varied between workplaces. Structural factors such as design of the work environment, internal mail and email systems, and work hours influenced the delivery of the interventions in some workplaces and qualitative data indicates this may have influenced success. There was also an indication that management involvement and workplace culture were major factors influencing participant perceptions of effectiveness of particular education strategies.
Overall it is concluded that while the second intervention involving leadership (but without participant ownership) achieved the greatest reduction in use of the single occupant vehicle, the third intervention achieved the greatest long-term impact on participants and organizations. As a result the definition of effectiveness is complicated and is dependant on whether preferred outcomes have a short-term or a long-term focus. These findings have implications for the way in which achieving sustainable transport in metropolitan areas is approached, as well as other environmentally sustainable behaviours.
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